

THE EFFECTS OF THE TEXAS LEARN, GROW, EAT, GO! PROGRAM AND THE  
INFLUENCE ON KNOWLEDGE, ATTITUDES, AND BEHAVIOR OF CHILDREN  
REGARDING PHYSICAL ACTIVITY, NUTRITION, AND PERCEPTION OF  
HEALTH

A Thesis

by

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## ABSTRACT

Nutrition and physical activity has a major impact on the growth and development of children and therefore plays an important role in their lives. Proper nutrition includes the consumption of five fruits and vegetables a day. Physical activity is required for 60 minutes a day, and most of American youth are below that value. Therefore, education is needed in order to increase the consumption of fruits and vegetables and to increase physical activity in children.

The purpose of this study was to determine the level of knowledge about, perceptions of, and attitudes toward nutrition, physical activity knowledge, and perception of health. Thirty-two elementary schools, representing four geographical locations, each having four 3<sup>rd</sup> grade classrooms participated in the study from Fall 2012 to Spring 2013. Students' nutritional knowledge and physical knowledge was measured using a pre and post survey method.

Statistically significant differences were found between pre and post scores of the knowledge section on both nutrition and physical activity, as well as perception of health. After completing the Texas Learn, Go! Eat! Grow! Program (LGEG) curriculum, students, regardless of age, ethnicity, and location had increased in knowledge about the benefits of eating fruits and vegetables, as well as the need for physical activity and perception of health.

## DEDICATION

I would like to dedicate this thesis to my family and friends. Thank you for your continuous love and support and for always encouraging me to be the best I can be.

Finally, I give all of my thanks and praise to God, for without him, I would be nothing.

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## NOMENCLATURE

B/CS	Bryan/College Station
HSUS	Humane Society of the United States
P	Pressure
T	Time
TVA	Tennessee Valley Authority
TxDOT	Texas Department of Transportation

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## CHAPTER I

### INTRODUCTION

The high prevalence of childhood obesity in Texas is cause for concern because it is linked to negative health consequences for children and their families (ADA, 2006). Schools are uniquely positioned to have a positive impact on children's knowledge and behaviors associated with obesity (Texas A&M AgriLife Extension LGEG Proposal, 2012). For example, vegetable exposure plus school gardening has been shown to improve consumptions of fruits and vegetables. Adding more frequent and more vigorous physical activity during school has been shown to improve student fitness and weight (ADA, 2006). The home environment is also an important influence on a child's eating and physical activity behavior. The greater the consumption of vegetables and the more parents participate in physical activity, the higher consumption of these foods and exercise by their children. (Texas A&M AgriLife Extension LGEG Proposal, 2012). With child obesity rates among low-income children in Texas ranging from 10% to over 20%, engaging schools and families in prevention efforts is critical

#### **Background of the Study**

Texas A&M AgriLife Extension Service (AgriLife Extension) has programs to address childhood obesity already in place. Texas Learn, Go! Eat! Grow! Program (LGEG) seeks to combine interdisciplinary programs in order to make an impact on children's behaviors related to childhood obesity. The LGEG program is a combination

of multiple health education Extension programs. The LGEG program combines the efforts of the Junior Master Gardener (JMG) program, by including the importance of “hands-on” activities for produce. The second phase of the LGEG program involves the Walk Across Texas (WAT) program. The WAT program is specified in physical activity, predominately walking 833 miles during eight weeks. By including the WAT program in the LGEG program, students are gaining knowledge and participation by being physically active. The third phase includes the Coordinated Approach to Child Health program (CATCH). CATCH was developed to enhance knowledge, and decrease the possibility of children obesity, nutrition, and physical activity. This combined to the LGEG program, provides educational research to the participants, as an outcome goal to provide a healthier lifestyle for children. Although everyone who was enrolled in the LGEG program did gain an aspect of the three programs mentioned above, including WAT for physical activity. CATCH as an end goal to lower childhood obesity, and JMG for hands on with vegetables, not every participant was enrolled in each of the three programs.

The LGEG curriculum emphasizes science, math, language art/reading, social studies and health through effective learning activities. The LGEG curriculum was designed to engage children and their families in school gardens, vegetable recipe tastings, classroom activities, and take home family stories. The LGEG curriculum includes:

- 10 weeks of in-class Texas Essential Knowledge and Skills (TEKS) aligned, activities with two concepts per week (taught by the teacher).

- Classroom raised bed or container garden.
  - Classroom vegetable tastings and food.
  - Family physical activity newsletters.
  - Family physical activity bonus miles.
  - Physical activity walking BINGO.
  - Classroom “physical activity breaks” related to school subjects.

Local county agents partner with school districts, afterschool programs, and summer programs to train teachers, school staff, and center staff on how-to implement the program.

### **Statement of the Problem**

There was a need to determine the effectiveness of the LGEG program. By evaluating the correlation between health education programs implemented in schools and the increase outcome, of nutritional, and physical activity knowledge, and perception of health in our youth. Prior to this study, multiple measures existed to determine the importance of health education programs in schools. However, with the results from the LGEG program pre to post survey administered allowed the researcher to further determine if the program could meet the issues facing children perception of personal health image in today’s society, along with nutritional knowledge and physical activity.

Knowledge, perceptions, and attitudes were measured to determine the affect of levels on physical activity, and nutrition. Perceptions of health were also measured to determine those perceptions in the environment.

### **Purpose and Objectives**

The purpose of this study was to determine the level of knowledge about, perceptions of, and attitudes toward nutrition, and physical activity, as well as the perception of health. The aims developed to guide the study were as follows:

*Research Aim One:* To describe the participant's demographics including gender and ethnicity.

*Research Aim Two:* To determine if the LGEG program increased the participant's knowledge about, perceptions of, and attitudes towards physical activity?

*Research Aim Three:* To determine if the LGEG program increased the participant's knowledge about, perceptions of, and attitudes towards nutrition?

*Researching Aim Four:* To determine if the LGEG program increased the perception of health?

### **Significance of the Study**

To analyze if health programs such as the LGEG have an influence on the nutrition and physical activity behavior in adolescents.

### **Limitations**

Due to the nature of this program being developed when the researcher began the writing of this thesis, the researcher looked at the pre to post survey answers, which had

been from questions previously designed. Inadvertent respondents' biases may be present due to the self-reported youth answers. The training materials remained the same in each classroom setting, along with the lesson plans given to reach Texas Essential Knowledge and Skills (TEKS) standard. However, respondents from the pre to post surveys may have left the school district during the course of the program. Another limitation may have been when asking questions on the survey according to the level of involvement between the participant and physical activity, the involvement may have decreased for that day due to weather.

### **Definition of Terms**

The following terms are defined operationally for the purposes of this study:

*CATCH*: Coordinated Approach to Child Health; the most proven program to prevent childhood obesity and launch kids and communities toward healthier lifestyles, by impacting child's nutrition, level of physical activity, classroom environment and community.

*CEA's*: County Extension Agents; persons working for the Texas Agricultural Extension Service and the Prairie View A&M University.

*CSH*: Coordinated School Health;

*JMG*: Junior Master Gardner Program; an international youth gardening program of the university cooperative Extension network. JMG engages children in novel, "hands-on" group and individual learning experiences that provide a love of gardening, develop an appreciation for the environment, and cultivate the mind.

*LGEG:* Texas Learn Grow! Eat! & Go! program; a program in collaboration with Texas A&M AgriLife Extension, Texas A&M University, and UT Health to implement and evaluate the impact of two intervention programs (the Junior Master Gardner Program, and Walk Across Texas Program) designed to improve the physical activity and eating behaviors of children at thirty-two CATCH elementary schools in Texas.

*MV's:* Master Volunteers; local people with an interest in a particular subject. Extension provides further training that increases their knowledge and skill in that area. They may teach youth or adults, train other volunteers, and work on community projects through extension.

*Title I Schools:* schools that are under the federal education law, which provides funding to elementary and secondary schools for programs and services to help economically disadvantaged students to succeed.

*TEKS:* Texas Essential Knowledge and Skills; the state's standards for Texas public schools from kindergarten to year 12. They detail the curriculum requirements for every course. State-mandated standardized tests measure acquisition of specific knowledge and skills outlined in this curriculum.

*Texas A&M AgriLife Extension Services:* program offered through Texas A&M University to deliver research-based educational programs and solutions for all Texans.

*WAT:* Walk Across Texas is an 8 week program designed to help Texans establish the habit of regular physical activity.



## CHAPTER II

### LITERATURE REVIEW

#### **Physical Activity**

Physical activity bodily movement produced by skeletal muscles results in energy expenditure (Caspersen, Powell, & Christenson, 1985). Everyone performs physical activity in order to sustain life. However, the amount is largely subject to personal choice and may vary considerably from person to person (Caspersen et al., 1985). According to Centers for Disease Control and Prevention, children and adolescents should do 60 minutes (one hour) or more of physical activity each day. Recently, reported evidence has linked children and adolescents who participate in health programs which are implemented at their schools have also increased their amount of exercise. (Anderson, Bell, Adamson, & Moynihan, 2002). With an increased amount of physical activity, as well as nutrition knowledge, children's concepts of health can be influenced for the better (Contento, Balch, & Bronner, 1995). Benefits of physical activity included social benefits, enhancement of psychological status, physical sensation, and sports performance (O'Dea, 2003). Recently, reported evidence has also linked that children are more likely to participate in physical active when there is a friend present (Salvy et al., 2008).

#### **Nutrition**

According to the World Health Organization, "Nutrition is the intake of food considered in relation to the body's dietary needs. Good nutrition- an adequate, well

balanced diet combined with regular physical activity- is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.” Today, about one in three American kids and teens are overweight or obese (American Heart Association, 2014). During the Government hearing of, “A National Priority: The Importance of Child Nutrition Programs to Our Nation’s Health, Economy and National Security,” chairwoman Stabenow reported that, “Children need to understand the foundation of nutrition and good health. In the classroom, a school can spur a lifetime of learning and achievement.” Since this particular study was done in title one schools, researcher has been reported that overweight concerns and body dissatisfaction are highly prevalent amount third-grade girls and boys, across all ethnicities (Robinson et al., 2001).

### **Barriers of Not Participating in Health Education Programs**

Among children today, obesity is causing a broad range of health problems that weren’t seen until adulthood. These include high blood pressure, type two diabetes, and elevated blood cholesterol levels. There are also psychological levels. Obese children are more prone to low self-esteem, negative body image, and depression. (American Heart Association, 2014). Almost 50% of Americans are facing an eating disorder, and nearly one-half of America’s youth faces unhealthy eating habits (ANAD, 2013). Researchers have identified two reasons for eating disorders. One being that, body dissatisfaction, or the desire for thinness, is so prevalent among women and adolescent girls that it is now described as “normative discontent” (Rodin, Silberstain, & Striegel-Moore, 1985), while

the other, television and computer game consumption are a powerful influence in the lives of most children (Dworak et al., 2007). Research shows that children spend almost a third of their day on electronics (Reed and Suman, 1999).

### **Physical Activity & Nutrition Knowledge in Youth**

Schools are uniquely positioned to have a positive impact on children's knowledge and behaviors related to nutrition and physical activity by creating a healthy environment with consistent messages and engaging activities that promote a healthy weight (Brockman et al., 2009). In Texas, all elementary schools are required by state policy to implement specific Texas Education Agency "approved" curricula (TEA Mandate, 2014). Adolescence is a period in life when changing bodies and increasing awareness of social standards make body awareness especially salient (Freedman, 1984). Moreover, schools educational programs are uniquely positioned to have a positive impact on children's knowledge and behaviors related to nutrition and physical activity (Hoelscher et al., 2009; Hoelscher et al., 2010; Coleman et al., 2005).

### **Perceptions of Health**

Recently, reported evidence has identified that 24% of children beginning at age's 6-years-old have a desired body image (Tranofsky-Kraff et al., 2004). Comments made by young boys and girls suggested that the images portrayed by the media influence their preference for thinner more attractive individuals over obese individuals (Norton et al., 1996). Such stereotyping from television viewing increased fat stereotyping, leaner body standards, and increased eating disorders (Harrison, 2000). With curriculum meeting health needs of students, and an approach to physical activity

involving parents and teachers being met, children's personal health improved ( Hopper et al.,2013).

### **Conceptual Guidance**

#### *Social Cognitive Theory*

Social cognitive theory (see figure 1) offers a vantage point from which to examine the influence of mediated content on audiences' attitudes and behaviors (Bandura 2001.) Drawing from theoretical explanation, social cognitive theory suggests that, for mediated content to positively affect audience members' behaviors, the audience must pay attention to similar performing behaviors in comparison to the two known personal determinants and environmental determinants. Social cognitive theory holds relation to social background from ones culture. Similarly, social cognitive theory is frequently referenced as a framework to explain the patterns that media present regarding topics, such as sex or race; these topics maybe identified through content analysis (Aubrey, 2004; Graves, 1999; Mastro & Stern, 2003). Although its predictions are in line with the theory, these studies do not test such predictions. Instead, these studies suggest possible effects to be tested with additional empirical work (see Nabi & Clark, 2008, for similar critique).



*Figure 1. Social Cognitive Theory (Bandura, 1986)*

### *Environmental Determinants*

There are two arguments between sociologist and psychologist. Sociologists argue that behavior is learned from one's environment and the society one is raised in. However, psychologist believe that every action one takes is due to procedures in one's mind. "Because of the influential role the mass media plays in society, understanding the psychosocial mechanism through widely symbolic communication influences human thought, affect, and action is of considerable import" (Bandura, 2001, p. 94). With the media being everywhere, people perceive images of what they want to look like, how to act, even the way to dress (Lindberg, 2009.) All of these are attributions in one's environment. Each attribute is also a way of learning as human beings. Humans base their behavior on what is accepted, and not accepted, according to society (Bandura, 2001).

As humans, we follow the society norm (one's environment) to direct one's daily activity. It affects how one handles issues, communicates, and carries one self in public.

As a result, social cognitive theory is the description of socially mediated pathways that are influenced by the media, which link participants to social networks and community settings. Such links provide natural incentives and continued personalized guidance for a desired change (Bandura, 2001). Understanding the importance of environmental effects on one's community, one can better link social diffusion of behavior in terms of psychosocial factors and adoption of social networks.

### *Personal Determinants*

“Most human behavior is directed by forethought” (Bandura, 2001, p. 268).

Personal behavior is something that a person thinks about before committing the task at hand. However, many sociologists disagree with this argument. Sociologists argue that one's mind takes over the body, and one's actions are done without thinking of the future outcomes (Stryker, 1980).

According to the social cognitive theory, conceived futures can operate anticipatorily as motivators and regulators of behavior. Economic classes, ethnicities, and gender define development in society. Sociologists argue that humans need to first understand one's “cultural baggage” (Bandura, 2001).

Parents define their children as individuals with certain morals and values. Without these foundations, children would not be able to survive in society (Stryker, 1993). When describing social cognitive theory, one makes decisions based on these cultural attributes. These morals and values determine children's understanding of right from wrong and one's conscious beliefs. Such attributions can be explained as personal determinants.

“Throughout much of the history, media effects research, and great attention has been placed on the possible negative consequences media content has on an audiences’ attitudes and behaviors” (Bryant, 2001). Therefore, social cognitive theory explains how behavioral effects might emerge (Bandura, 2001, p.101). Given that the media landscape is populated with attractive, likeable characters often engaging in risky or antisocial behaviors, it is only logical to presume that audience might model such behaviors. Harrison and Cantor (1997) found a positive relationship between exposure to magazines and women’s drive for thinness. The tendency for women’s magazines to link thinness to positive consequences engenders extrinsic motivation for dietary behavior (Harrison & Cantor, 1997). Children are beginning to desire this body image as adolescents (McKinely & Hyde, 1996).

### *Behavioral Determinants*

Behavioral determinants are physical and social factors that happen to someone in their life span that affects their behavior. When understanding the Social Cognitive Theory behavioral determinants can be described by using both ones personal and environmental determinants. A person acts upon what they know, rather it is from what they have learned, or what they are accustomed to. People establish behavior patterns when social and self-approval are consistent (Bandura, 2001).

Behavioral environments are referred to as knowledge seeking and a person’s interaction with their surroundings. A person’s perception or attitude is often influenced by how they react in certain situations.

## **Social-Ecological Models**

The word “ecological” refers to interactions between organisms and their environment. When an organism is affected by social structures in the environment (family, friends, community organizations, and policy-making institutions), these interactions are part of the organism’s social ecology (Thomas Tai-Seale, 2015).

Social ecology is actually more than just an approach to health education. It’s an approach to health promotion that considers the complexity of environmental influences on individuals. Recently, some social ecological models have been developed that do not look like the standard “bulls-eye” model. However, the European Health Indicator Development (EUHPID) proposed a social ecological model to help construct, guide, and classify health promotion indicators. (Thomas Tai-Seale, 2015). Health is consequence of the fit between a person and their environment, between individual behavior and social functions, as much as it alters the behavior of one social unity or the expressive behavior of any one member of society (Kelley, 1968).

### *Logic Model*

There are a variety of useful models to consider when health planning. The LGEG program decided to use one known as the logic model. A logic model is an illustration showing the hypothesized causal relationship among variables often using arrows to show the direction of casualty (Thomas Tai-Seale, 2015). In the LGEG logic model, the theory of the problem-i.e. the understanding of the causes of the problem. Following was the building of the program around this theoretical logic. Organizational



forums were used to design activities that changed the components that were problems in the theory (See appendix A).

## CHAPTER III

### METHODS

The effectiveness of the LGEG program was evaluated to determine nutrition and physical activity knowledge, and perception of health for children in title one schools.

The research procedure, protocol, and data collection for this study were approved by the Texas A&M University Institutional Review Board (IRB-2011-0012).

#### **Research Aim One - Study Population**

The research study took place in 32 elementary schools in four geographical areas in Texas to reflect the racial/ethnic composition of the state. Inclusion criteria of the schools were:

- Located within our selected geographical area as a Coordinated school health; CSH program.
- School Classified as Title I school.
- Commitment at the principal and teacher level for 3<sup>rd</sup> grade implementation.
- Willingness for data collectors to come into the school to recruit participants and collect data from 3<sup>rd</sup> grade students.

Students and parents were recruited by the University of Texas School of Public Health (UTSPH) research team during May 2011 at each school. Each school had at least four, 3<sup>rd</sup> grade classrooms with 120 students. With 1049 student participants from the sample of 32 schools were recruited. A majority of the cohort (e.g., at least 60%) was expected to be maintained based on retention rates from previous studies (Luepker, Perry, McKinlay, Nedar, Parcel, Stone, Webber 1996).

Research forms required by schools were completed to ensure privacy and all criteria was met. Inclusion criteria for the students were:

- Enrollment in the 3<sup>rd</sup> grade at a study school.
- Willingness to complete the Student Questionnaire. Exclusion criteria were:
  - Children who are on special diets.
  - Children whose primary language at home is not English or Spanish.
- Inclusion for the parents were:
  - Ability to communicate in English or Spanish.
  - Caretaker of a 3<sup>rd</sup> grade child (at the beginning of the study).

The primary aim of this study was to describe if educational programs have an influence on children's nutritional knowledge, behavior, physical activity knowledge and their attitudes and behaviors by analyzing the LGEG program. The LGEG program was selected because the programs goals and objectives match to the researchers and was able to receive access to the program data.

### **Educational Curriculum**

The curriculum consisted of the JMG and WAT programs, combined with CATCH.

Training for teachers were conducted and included eight section. Those sections are listed below.

- LGEG Introduction/Benefits, Communities, Collaborations
- Hands-on: Activities done in the classroom through the LGEGG curriculum.
  - *LEARN* portion (week 1-5)

- Children who have completed the program came and cooked a recipe for the teachers.
- *LEARN* portion (week 6-10)
  - Overview of course.
- *EAT* (teachers made the famous recipe Cinnamon Carrot Crunch)
- *GO, WAT*,
  - Had teachers play TIC TAC TOE, and went outside to be active
  - Group discussion

### **Instrumentation**

Both pre and post survey contributed to completing the research objectives. The pre and post survey instruments consisted of 41 questions designed by UTSPH, and Texas A&M Health Sciences Center School of Rural Public Health (SRPH) (see Appendix B). The team had several meetings in which the instruments were discussed. Both construct validity and content validity were addressed by experts in child nutrition and health education program. The instruments were designed to gather knowledge, attitude, perception, and demographic information from respondents.

Information gathered from population demographics including ethnicity and gender was included. The physical activity section included 13 questions designed to gather the participant's knowledge about the general concepts and principles of physical activity. The next section included 18 questions to gather participant's knowledge about the program and to understand concepts of nutrition.

The population demographic questions utilized for this study were gender and ethnicity. Seven of the 13 physical activity questions were used for aim two and aim three used eight of the 18 nutrition questions. Finally, the fourth aim reported on two of the four perception of health questions. A listing of the content questions is provided below.

### **Research Aim Two Questions - Physical Activity**

Respondents were asked on the second section to mark their level of physical activity,

- Light
- Moderate
- Vigorous

Furthering question such as, “Did you play outdoors for about 30 min?”

- Yes
- No

Survey questions followed with if participants are not outdoors, then what they are participating in while indoors.

- Sit watching TV, DVD's.
- Sit playing on the computer.
- Sit playing video games.

Data was further collected by asking the participant how they would rather participant in physical activities:

- Walk

- Watch TV with a Friend.
- I would rather play running games

### **Research Aim Three Questions - Nutrition**

Respondents were asked what they would rather drink. Options were as follows:

- Soda
- Juice

Survey questions then asked the participants to rank how often they consumed vegetables and fruits “Yesterday.” Options were as follows.

- No, I didn’t yesterday.
- Yes, I did one time yesterday.
- Yes, I did two times yesterday.
- Yes, I did three or more times yesterday.

The ending questions were designed for the County Extension Agents (CEA’s) knowledge on what children know about protein, carbohydrates, fat, vitamins and minerals, and water. The reports were analyzed on correct, and incorrect answers.

### **Research Aim Four Questions – Perception of Health**

Respondents were asked, “My teachers like for me to be healthy?” and “Other kids at my school like to be healthy?” The options to choose from were as follows:

- Not at all.
- Yes, a little.
- Yes, a LOT!

## **Data Collection**

### *Procedures*

To accomplish the goals and objectives for the LGEG program, training sessions for teachers, CEA's, and Master Volunteers were conducted by the state Extension team using a standard training protocol for program implementation. Volunteers and program partners were recruited to help implement the program at more title one schools. Volunteers were then cross-trained to provide specific support to this project. Cross-training included training on the JMG and WAT; school personnel implementing both programs attended both trainings.

The data consisted of observed physical measures for prevalence of student overweight and obesity (i.e., height, weight and waist circumference) as well as survey data. Student fruit and vegetable consumption, decreased sugar sweetened beverage intake, physical activity, and sedentary behavior was assessed using the Student Survey Questionnaire (Appendix B) which also included sub-scales measuring child psychosocial variables and demographic information (ethnicity/ race, gender, age) (see Table 2). The questionnaire was administered by trained research staff, which went to the schools to collect the data. All of the instruments used were developed with an emphasis on cultural appropriateness. In addition, each questionnaire was available in English and Spanish. At least one bilingual staff was present during data collection.

Each school included teachers who completed the training sessions. Schools were provided the curriculum. Data collection instruments were then mailed to the

research team. The pre to post survey design provided the ability to analyze the data for changes from program initiation to program completion.

### **Data Analysis**

Only students who completed a pre survey, the LGEG program, and the post survey (which consisted of the same demographic questionnaire, preference questionnaire, and knowledge questions) were included in the data analysis. The data was then analyzed by the researcher using Statistical Package for Social Sciences, (SPSS) for Windows Release 10.0 (SPSS, 1999).



## CHAPTER IV

### FINDINGS

This chapter presents the findings from participant's pre and post surveys as they relate to the research aims developed for this study. The pre survey was given prior to the implementation of the Texas Learn, Grow, Eat, Go program (**LGEG**), and the post survey was administered after the completion of the program. Each section was analyzed and will be discussed further in this chapter. To better understand the findings, this chapter is presented based on the four aims of this research. These aims are as follows:

- Aim One: Population Demographics
- Aim Two: Physical Activity
- Aim Three: Nutrition
- Aim Four: Perception of Health

The findings from this study are based on changes from the pre to post surveys. Both descriptive and inferential statistics are provided. Missing data was excluded from the analysis but identified in each analysis. The findings are presented below.

#### **Aim One: Population Demographics**

Demographic data reported the population of those participants involved in the LGEG program, and those who completed the survey instruments. Four questions were used to develop a profile of the population, but for measures of this study only two were analyzed. The population (n=1049) participants provided data on gender and ethnicity.

All participants were in the third grade and were between the ages of eight and nine-years-old. Table 1 represents the gender of the participants.

Table 1.

*Descriptive statistics- gender*

Response	%/f
Male	48% (502)
Female	52% (547)
<i>1049 total population</i>	

The participants were asked to report their ethnicity, and of the (n=1035), 43% (n=448) indicated that they were of the Hispanic or Latino descent. Following were the respondents who indicated that they were White, 19% (n=191) and 16% (n=166) identified themselves as Black and African American. Respondents that indicated themselves under “Other” ethnicity were 11% (n= 118), native Hawaiian or Pacific 1% (n=12) and American Indian Alaskan was 5% (n=50). Respondents that identify with more than one race were 5% (n=50) Table 2 provides a summary of the full results for ethnicity.

Table 2.

*Descriptive statistics- race*

	%	f
American Indian or Alaskan Native	5%	(50)
Black or African American	16%	(166)
Hispanic or Latino	43%	(448)
Native Hawaiian or Pacific Islander	1%	(12)
White	19%	(191)
Other	11%	(118)
Identifies with more than once race	5%	(50)

*14 missing data*

*1049 total population*

### **Aim Two: Physical Activity**

The aim of this component of the study was to determine how the participants involvement in the physical activity portion of the study changed according to their answers in the pre to post surveys. When analyzing data, seven of the 13 physical activity questions in the survey were used. Those seven questions were directly related to the specific aim of the study.

Table 3 provides a full summary of the results in relation to daily participation of physical activity. Significant changes were found between pre to post surveys as related to moderate physical activity ( $X^2 = 5.751, p = .016$ ) and vigorous physical activity ( $X^2 = 8.941, p = .003$ ). Although trending in a positive direction, the results for light physical activity was not significant.

Table 3.

*Almost every day I do?*

	Response	Pre-Test	Post-Test	X <sup>2</sup>	p-value
Light Physical Activities	Yes	81% (828)	83% (867)		
	No	19% (195)	17% (173)	2.174	.140
Moderate Physical Activities	Yes	86% (873)	89% (927)		
	No	14% (147)	11% (114)	5.751	.016*
Vigorous Physical Activities	Yes	86% (877)	90% (941)		
	No	14% (141)	10% (99)	8.941	.003*

\* Indicates a statistically significant finding at a level of  $\leq 0.05$

Findings of research in the intensity of physical activity lead to a more in depth analysis involving the amount of time the participants were performing physical activity. Respondents (n=1023) were asked if, “Yesterday, did you play outdoors for about 30 min?” Table 4 provides the summary of this data. Not only did physical activity increase but the amount of time did as well, increasing from 67% to 73% ( $X^2 = 11.009$ ,  $p = .001$ )

Table 4.

*Yesterday did you play outdoors for about 30 min?*

Response	Pre-Test	Post-Test	X <sup>2</sup>	p-value
Yes	67% (688)	73% (761)		
No	33% (341)	27% (282)	11.009	.001*

\* Indicates a statistically significant finding at a level of  $\leq 0.05$

As a part of the survey, the participants were asked how many hours they spent on inside activities. A significant difference ( $p = .000$ ) was found for the amount of time playing on a computer. No difference was detected for watching TV or playing video games. Table 5 provides a summary of these results.

Table 5.

*Yesterday how many hours did you?*

		PRE		POST	
		f	%	f	%
Sit watching TV, DVD's?	I didn't spend any time doing yesterday	234	22.7%	222	21.3%
	Less than 1 hour	318	30.9%	340	32.6%
	1-2 hours	219	21.3%	224	21.5%
	2-4 hours	76	7.4%	104	10.0%
	More than 4 hours	183	17.8%	152	14.6%
Sit playing on the computer?	I didn't spend any time doing yesterday	591	57.4%	662	63.5%
	Less than 1 hour	169	16.4%	168	16.1%
	1-2 hours	111	10.8%	73	7.0%
	2-4 hours	56	5.4%	47	4.5%
	More than 4 hours	102	9.9%	92	8.8%
Sit playing video games?	I didn't spend any time doing yesterday	530	51.3%	553	53.1%
	Less than 1 hour	179	17.3%	165	15.8%
	1-2 hours	100	9.7%	110	10.6%
	2-4 hours	67	6.5%	73	7.0%
More than 4 hours		157	15.2%	141	13.5%

Sit watching the TV  $p = .622$

Sit playing on the computer  $p = .000^*$

Sit playing video games  $p = .180$

\* Indicates a statistically significant finding at a level of  $\leq 0.05$

After analyzing data on what indoor activities are keeping participants from being involved with outdoor physical activity, the surveys asked if physical activity would increase if there were a friend with you. Table 6 provides a summary of the questions used to describe what physical activities children would participate in if a friend were with them and the pre to post survey results. All three physical activity questions asked yielded a significant change from pre to post indicating a willingness to be more physically active when participating with a friend.

Table 6.

*I would rather?*

	Response	Pre-Test	Post-Test	X <sup>2</sup>	p-value
Play a running game,	Run	63% (602)	66% (681)		
Or walk with friends	Walk	37% (361)	34% (344)	4.558	.033*
Walk with friends or	Walk	65% (627)	76% (776)		
watch TV	TV	35% (332)	24% (241)	41.806	.000*
Watch TV or play a	TV	34% (218)	22% (167)		
Running game	Run	76% (713)	78% (764)	10.373	.001*

\* Indicates a statistically significant finding at a level of  $\leq 0.05$

### **Aim Three: Nutrition**

Aim three focused on how the participants changed nutritional behaviors as a result of participation in the program. The initial question focused on the choice between drinking soda or fruit juice. Participant's consumption of soda decreased from pre to post while the consumption of fruit juice increased. These changes were statistically significant. Table 7 provides a summary of these results ( $X^2 = 26.122$ ,  $p = .000$ ).

Table 7.

*If I could choose, I would rather drink soda or fruit juice?*

Response	Pre-Test	Post-Test	X <sup>2</sup>	p-value
Soda	42% (390)	32% (318)		
Fruit Juice	58% (543)	68% (680)	26.122	.000*

Missing Data Pre= 116 Post=51

Total Population 1049

\* Indicates a statistically significant finding at a level of  $\leq 0.05$

The next set of questions focused on the consumption of fruits and vegetables. Students were asked two questions, one based on the consumption of fruit, while the other was based on the consumption of vegetables. There was significant increase in the consumption of vegetables from pre to post. However, no significant findings were seen for eating fruits.

Table 8.

*Yesterday, did you?*

	Response	Pre-Test	Post-Test	Z	p-value
Eat any other vegetables like tomatoes?	No, I didn't yesterday	48% (493)	52 % (539)	-2.952	.003*
	Yes, I did 1 time.	29% (301)	28% (290)		
	Yes, I did 2 times.	11% (118)	11% (109)		
	Yes, I did 3 or more times.	12% (123)	9% (98)		
Did you eat fruit? (fresh, frozen, canned, dried?)	No, I didn't yesterday	22% (244)	23% (241)	-1.381	.167
	Yes, I did 1 time.	31% (322)	30% (311)		
	Yes, I did 2 times.	16% (167)	19% (199)		
	Yes, I did 3 or more times	31% (320)	27% (281)		

\* Indicates a statistically significant finding at a level of  $\leq 0.05$ 

One of the main objectives of the LGEG program was to educate children about nutrition and physical activity. One portion of the survey was designed specifically to assess the knowledge participants had on nutrition found in food. With the knowledge



about nutrition increasing in reference to the mean score of 1.51 to 1.83. Table 9 provides a full summary of the results for this item.

Table 9.

*Is \_\_\_\_\_ a nutrient found in food?*

		PRE		POST	
		f	%	f	%
Is Protein found in foods?	No	95	9%	58	5%
	Yes	528	50%	657	64%
	I don't know	403	38%	318	31%
	<b>Total</b>	1026	98%	1033	100.0%
<i>Total</i>		1049		1049	
Are carbohydrates nutrients found in foods?	No	208	20%	183	18%
	Yes	166	16%	211	21%
	I don't know	644	63 %	631	62%
	<b>Total</b>	1018	100.0%	1025	100.0%
<i>Total</i>		1049		1049	
Is fat a nutrient found in foods?	No	497	48%	460	45%
	Yes	275	27%	306	30%
	I don't Know	246	24%	262	26%
	<b>Total</b>	1018	100.0%	98.0	100.0%
<i>Total</i>		1049		1049	
Are vitamins and minerals nutrients found in foods?	No	123	12%	85	8%
	Yes	597	59%	727	70%
	I don't know	298	29%	222	22%
	<b>Total</b>	1018	100.0%	1034	100.0%
<i>Total</i>		1049		100.0	

Mean score for pre 1.51 and post 1.83. \*Standard deviation for pre 1.079 and post 1.12  
 Missing Data Protein Pre=23/Post=16 \* Missing Dara Carbohydrates Pre=31/Post 24  
 Missing Data Vitamins and Minerals Pre=31/Post=15

### Aim Four: Perceptions of Health

The aim of this component of the study was to determine how the participants involved in the program felt about the perception of personal health image. Four questions were included in the survey, however two were directly related to the focus of this study. Results of those two items are presented in Table 10. Both items for how teachers and other students perceive health for a participant were significant.

Table 10.

*Who likes you to be healthy?*

		PRE		POST	
		f	%	f	%
My teachers like for me to be healthy?	Not at all	40	4%	55	5%
	Yes, a little	113	11%	154	15%
	Yes, A LOT!	878	85%	829	80%
	<b>Total</b>	1031	100.0%	1038	100.0%
		1049		1049	
Other kids at my school like to be healthy?	Not at all	80	8%	134	13%
	Yes, a little	343	33%	462	45%
	Yes, A LOT!	603	58%	438	42%
	<b>Total</b>	1026	100.0%	1034	100.0%
		1049		1049	

\*Z= -3.132 \* p = .002 for teachers. \* Missing Data Pre=18/Post=11

\*Z= -7.606 \* p = .000 for kids. \* Missing Data Pre=23/Post=15

\* Indicates a statistically significant finding at a level of  $\leq 0.05$

## CHAPTER V

### CONCLUSIONS AND RECOMENDATIONS

This study was designed to determine the influence of the Texas Grow! Eat! Go! program, and to look further into health education programs implemented in schools, and the success of them. This study concentrated on the three aspects of the program: nutrition, physical activity, and perception of health. The most systematic and efficient means available to improve the health of America's youth is to establish healthy dietary and physical activity behaviors in childhood by promoting positive lifestyles and developing effective decision-making skills, which schools can play a key role in (Briggs et al., 2003).

When the chance for a health program benefiting children's health arises, such as the LGEG program, perceptions are formed and transformed based on these contacts. The purpose of this study was to determine the level of knowledge about, perceptions of, and attitudes toward nutritional and physical activity, as well as the knowledge of perception of health.

This study was conducted to help the LGEG program designers determine the effectiveness of the program. In addition, this study looked at the national level statistics on nutrition, physical activity, and perceptions of health education programs for children. Consequently, this study did not seek to prove, or disapprove, any previous studies that have been discussed. A discussion of the four aims of this program follows.

### **Study Summary of Aim One Findings: Population Demographics**

Respondents ranged from the age eight to nine-years-old, and were all enrolled in the third grade at title one schools. Females compromised 52% (n=547) and males compromised 48% (n=502). When respondents were asked to indicated their ethnicity, a majority indicated that they were of the Hispanic or Latino descent, 43% (n=488). Following, White, Black or African American, Other, American Indian or Alaskan Native, Identifies with more than one race, and Native Hawaiian or Pacific Islander.

### **Study Summary of Aim Two Findings: Physical Activity**

The second aim of this study was to analyze the participant's knowledge about, perceptions of, and attitudes towards physical activity. Overall, respondents experienced a change in their knowledge, attitude, and participation from pre to post survey. It could be expected that a some of this change can be attributed to being involved in the program. The majority of the survey response did increase in physical activity. In fact, each question within the survey lead to the next, which could be an explanation of the participant's answers of change.

For example, the beginning physical activity questions were about the level of physical activity you participate in daily. Light, moderate, and vigorous were all the different levels they could choose they participated in. Although there was no significant increase between light physical activity pre to post survey, there was a significant change between moderate and vigorous physical activity pre to post surveys. One possible explanation for this change is that students who were participating in light and moderate physical activity changed to involvement with vigorous physical activity daily.

Another survey item was designed to understand if the participants were not being active outdoors, and if so, what was keeping them indoors. The survey then asked the amount of hours spent indoors sitting watching TV, playing on the computer, and playing video games. The largest decrease was the amount of hours playing on the computer, which pre to post survey time decreased so much it was the most significant changes from the program (Sig=0.00). Table 5, included in chapter 4, shows children are beginning to spend a majority of their time inside watching TV, playing on the computer, and sitting playing video games. This data is supported by the work of Dworak in their 2007 research (Dworak et al., 2007).

Youth are more likely to be active when they are in the company of peers and friends than when they are alone, because youth physical activity typically involves some form of play that requires peers or play partners (Salvy et al., 2009). Therefore, the following questions asked the participants if they would rather be indoors watching TV, playing on the computer, or playing video games, in comparison to being outdoors with a friend. There was no significant change between playing a running game and walking with friends, which could be explained because they are both outdoor activities. However, when asking if they would rather walk with friends or watch TV, the pre to post survey showed a significant change ( $p = 0.00$ ), again showing one of the largest changes the program experienced. Following was the question asking if the participants would rather watch TV or participate in a running game. Again, the change was significant ( $p = .001$ ).

As a whole, many of the participants began participating more in physical activity from the beginning to the end of the LGEG program. At the beginning of the program, hours were being spent by the children inside playing on electronics. However, after the program, there was less time spent on the electronics and more time spent outside being physically active, especially if there was a friend involved.

### **Study Summary of Aim Three Findings: Nutrition**

The third aim guiding this study sought to analyze the participant's answers on their pre to post survey questions in reference to their knowledge about, perceptions of, and attitudes towards nutrition. The first set of questions began with the participant's preference over soda or fruit juice. At the beginning of the program, 58% (n=543) chose fruit juice, and 42% (n=390) chose soda. Post survey scores showed a significant increase of participants choosing fruit juice over soda. Participants choosing fruit juice increased to 88% (n=690), and those choosing soda decreased to 32% (n=318.) When analyzing the change, ( $p = .000$ ) this result was the largest difference in the nutrition section.

Furthering the nutrition based portion, the survey began to ask the participants on their consumption of vegetables and fruit. The third question that was analyzed under the nutrition section was, "Yesterday, did you eat any other vegetables like tomatoes?" The answers were broken down in accordance to the amount of times the participants may have consumed vegetables, "yesterday."

Pre survey results indicated that, "No, I didn't eat vegetables yesterday," at 48% (n=493). "Yes, I ate vegetables one-time yesterday 29%, (n=301). "Yes, I ate vegetables

two times yesterday 11% (n=118). “Yes, I ate vegetables three or more times yesterday,” 12% (n=123). Post survey indicated significantly different findings. “No, I didn’t eat vegetables yesterday,” at 52% (n=539). “Yes, I ate vegetables one-time yesterday.” 28%, (n=290). “Yes, I ate vegetables two times yesterday 11% (n=109). “Yes, I ate vegetables three or more times yesterday,” 9% (n=98). In correlation to the reports in Table 8, there was a significant change ( $p = .003$ ). One can conclude that from these reports, more participants consumed vegetables pre to post survey, especially when referring to the missing data set.

The survey then asked about the consumption of fruit. Survey questions asked, “Yesterday, did you eat fruit?” Again the answers were listed in relation to the amount of times “yesterday” that the participant consumed fruit. Pre survey indicated that 22% (n=224) “No, I didn’t eat fruit yesterday.” 31% (n=322) “Yes, I ate fruit one-time yesterday.” 16% (n=167) “Yes, I ate fruit two times yesterday.” 31% (n=320) “Yes, I ate fruit three or more times yesterday.” Post survey indicated 23% (n=241) “No, I didn’t eat fruit yesterday.” 30% (n=311) “Yes, I ate fruit one-time yesterday.” 19% (n=199) “Yes, I ate fruit two or more times yesterday.” 27% (n=281) “Yes, I ate fruit three or more times yesterday.” Further analysis using ( $p = .167$ ) and reports were summarized in Table 8 explains that there wasn’t a significant change in the consumption of fruit before and after the program.

The final reports on nutrition were questions based upon knowledge of nutrition found in foods (see Tale 9). These questions were arranged differently in comparison to other portions of the survey. Such questions were asked with the answers only including

negative or positive realms, since the participants were either correct or incorrect. The first question asked, “Is protein found in foods?” Pre survey reports indicated that 9% (n=95) answered the question incorrectly, while 50% (n=528) answered the question correctly, and 38% (n=403) participants did not know the answer. Post survey indicated that 6% (n=58) answered incorrectly, and 64% (n=657) answered correctly. The remaining participants 31% (n=318) did not know the answer.

The second question was, “Are carbohydrates nutrients found in foods?” Pre survey indicated that 20% (n=209) answered the question incorrectly, and 16% (n=166) answered the question correctly, and 63% (n=644) did not know. Post survey reports analyzed that 18% (n=183) answered the question incorrectly and 21% (n=211) answered the question correctly. However, 62% (n=631) didn’t know the answer. Third question, “Is fat a nutrient found in foods?” 49% (n=497) reported the answer incorrectly, and 27% (n=275) reported the answer correctly, leaving the remaining 24% (n=246) participants not knowing the answer. The final question, “Are vitamins and minerals nutrients found in foods?” Pre survey reports indicated that 12% (n=123) answered the question incorrectly, and 58% (n=597) answered the question correctly. The remaining 29% (n=298) did not know the answer. Post survey reports were as follows: 8% (n=85) answered the question incorrectly, and 70% (727) answered the question correctly. The other 22% (n=222) respondents did not know the answer.

This data was reported using frequency statistic tables, and was then reformed into word. The analysis when indicating the mean showed that there was a difference, however the standard deviation showed that exact change. Although each pre to post



survey, the knowledge did enhance, there was no significant change reported through the surveys until the question about vitamins and minerals found in foods.

### **Study Summary of Aim Four Findings: Perception of Health**

The final aim of this study was to analyze two questions on perceived health. The first question asked, “My teachers like for me to be healthy?” and the second question asked, “Other kids at my school like to be healthy?” The analysis was conducted using a Wilxonxon Signed Ranks Test because the dependents data is ordinal, as it is based off of ranks. The answers included; “Not at all,” “Yes, a little,” and “Yes, A LOT!”

Pre survey and post survey reports indicated a significant change ( $p = .002$ ,) from the beginning to the end of the program. Pre survey reports that “My teachers like for me to be healthy,” indicated that 4% ( $n=40$ ) said, “Not at all,” and 11% ( $n=113$ ) said, “Yes, a little,” while 85% ( $n=878$ ) indicated that, “Yes, A LOT!” Post survey results were 5% ( $n=55$ ). “Not at all,” 15% ( $n=154$ ), and 80% ( $n=829$ ) reported, “Yes, A LOT!”

The final question in this section asked if, “Other kids at my school like to be healthy?” Such answers were the same as above, and reports did indicate a change pre to post survey. Pre survey results concluded that, 8% ( $n=80$ ) said, “Not at all.” 33% ( $n=343$ ) indicated, “Yes, a little.” Finally, 58% ( $n=603$ ) said, “Yes, A LOT!” Post survey indicated 13% ( $n=134$ ) “Not at all.” 45% ( $n=462$ ), and 42% ( $n=438$ ) Yes, A LOT!

Analysis was concluded on pre to post survey of these questions with a  $p$  value of .002, indicating that there was a significant change between pre to post surveys for both questions.

### **Conclusions and Recommendations for this Study**

Children are “literal” learners (Vosniadou & Ortony, 1983), therefore when the questions asked the participants about the physical activities they were involved in “Yesterday,” they will only look at yesterday. If a participant was sick yesterday, or out with his/her family, that doesn’t mean he isn’t physically active, but that they may not have been able to be physically active that day. With collecting data from this age group, and making the questions so detailed; in further research more options should be added to the question such as, “I couldn’t play outside yesterday.” Furthermore, including questions about what the weather was like on this “Yesterday,” may help the data analysis portion. If the reason the participant may not have been involved in physical activity was due to the type of weather keeping them from being outside, then this is not the participants fault from being physically active and as a result limits the analysis if the program was having an effect.

Children are also visual learners, (Maui, 2013) with vocabulary being described as light, moderate and vigorous. Including pictures in this part of the survey may be beneficial in helping the participants understand the different levels. Although this study was over the first year the program was active, further research could look at interviewing participants later on in their education to see if they program made a short-term or long-term effect.

Nutrition is more of an educational based section instead of being outdoors and being physically active. It is likely attributed to the reason that there was more of a significant change in physical activity for children who completed the program in

comparison to nutrition. Nutrition attitudes, behaviors, and perception, as listed above, from within the survey are more of a learning process than being active outdoors.

Social benefits come with children being active, and they enjoy such activity (O'Dea, 2003). However, learning is a different encounter especially when access to such foods and drinks is difficult due to poverty reasons. Although the LGEG program supplies the participants with hands on products, supplies, and seeds, when going home they may not be able to attain such products. With this program being targeted to title one schools, the program has been designed to educate the participants on such food and drinks that are easily accessible to the targeted demographics.

Schools can play a key role in reversing health issues in children, through school nutrition policies that ensure coordination of comprehensive nutrition education programs, child nutrition programs, and a healthy school environment (Briggs et al., 2003). Therefore, by encouraging children to be active and making available to them health educational programs, the nation as a whole could decrease health issues children are facing. Such issues include; obesity, anorexia, bulimia, diabetes, and more (Briggs et al., 2003).

It is a necessity to continue health education at schools, in afterschool programs, through athletic activities, and with involvement of local produce farmers. Further implication of the LGEG program could consider offering the participants to an after school program where they are able to continue to grow, harvest, prepare, and cook foods. As a result, when they eat such foods, they are not considered foreign products. Instead, participants will be excited to consume such products they helped produce.

It is suggested that with the results from the surveys, and information provided in the literature review, the program should include more pictures, videos, and hands-on projects. As a result, this could further the participants' learning (Maui, 2013), and provide a better analysis of the survey. With a more in-depth understanding of the education, proving the importance of nutrition including the benefits it can have on the human body in the future is very beneficial.

Considering that children are visual learners, (Maui, 2013) getting the community involved, such as farmers, could provide hands-on interactions with produce and animals. If the children could grow the produce, take care of it, harvest it, then cook it, they could be more excited to consume it and further their knowledge. Same with animals; being able to feed it, milk it, and learn cuts of meat could all be ways to influence their knowledge.

Perceived personal health image is an issue for many people within our society, but something to consider is that 6- and 7-year-olds are already gaining a body image, which has been linked to children who look at women's magazines, music videos, and television (Dognt & Tiggemann, 2006). If such programs would begin at a younger age, how many health issues could be declined through health education programs alone? Teachers are a bigger role in a student's life than many may consider, especially at a young age. For further education on the program, it is being recommended that there be a portion added to the LGEG program on perceived body image. Including such questions on the survey could indicate which image is considered the healthiest in comparison to the most overweight and it is suggested to use the Children's Body Image

Scale (CBIS) developed by researchers (Truby & Paxton, 2002) (see Appendix C).

Survey questions could then include, “What fruits do you think such images consume,” as well as physical activity. This would help the program to develop healthy eating habits and healthy body image. Reported answers could allow the body image portion to grow, and as a result, could decrease false opinions on healthy body image

### **Recommendations for Future Research**

Based on the findings of this study, the following research recommendations are being made:

- 1) *Target different age groups in future efforts* - The targeted population is only third graders, which is also a known time for the body to go through puberty. With the LGEG program continuing in title one schools, it should begin at a younger age to begin the education process before changes in their bodies.
- 2) *Implement the program in more diverse schools* - The ratio of Hispanic Latino to non-Hispanic Latino descent is large. The program should consider going to schools with increased diversity, as well as targeting schools outside of title one programs. As a result, this would reach more children; increase perception of, attitudes toward nutritional, and physical activity, as well as provide a model to healthy body image.
- 3) Due to the demographics and that LGEG program is only offered in a few title one schools, new analysis should be reported on pre to post surveys when the program becomes involved with more schools.

4) *Include a body image component in future efforts* - The researcher thinks that it is very important to include a body image portion to the program. If the LGEG program includes a portion on the facts behind Anorexia, Obesity, Bulimia, and Diabetes at a young age such health issues found in children could decrease, including activities to go home and do with their family, (Hopper et al., 2013), explanation of eating disorders, and correct BMI could help limit this issue.

Include a portion on the survey about what you ate at home: The researcher thinks it would be beneficial for the survey to include questions about what the participants were eating once they returned home. If the questions asking “Yesterday,” what did you eat and if yesterday was a Sunday then what the children are eating is back home. This would help the program know that a problem may not only be with the lack of knowledge the children are getting from nutrition, but the lack of accessibility the participants have to such produce once leaving the school. If this is a problem, the program could then develop was to get the knowledge and produce more within the homes.

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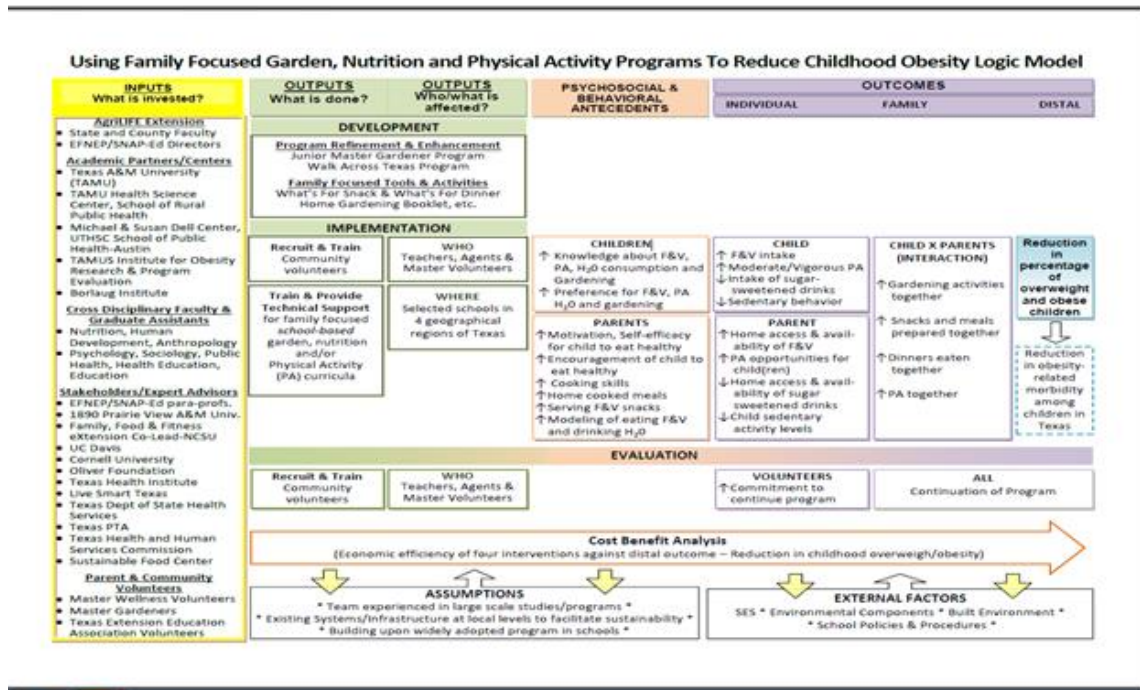
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## APPENDIX A



## APPENDIX B



**UTHealth**  
The University of Texas  
Health Science Center at Houston  
School of Public Health  
Biomolecular Research



**M. D. ANDERSON CANCER CENTER**  
FOR HEALTHY LIVING



**TEXAS A&M AGRILIFE EXTENSION**

**Texas GROW! EAT! GO!**

**Student Assent Form**

This is a research project. It is about food, activity, and gardening. We want to know what you eat, how you are active, and if you help grow vegetables. This is not a test. There are no right or wrong answers. We just want to know what is true for you.

- You will be asked to answer questions. Some about what you eat, moving your body, and growing food.
- No one at school or at home will see your answers.
- If you do not want to answer a question, you can skip it.
- You will be asked to answer these questions two times in 3<sup>rd</sup> grade and one time in 4<sup>th</sup> grade.
- We will weigh you and measure how tall you are. We will also measure the size of your arm. We will write down the information.
- You will be asked to write in a notebook about how much you move your body. You will also be asked to write down if you help grow food and cook with your family.
- You may stop being in this project at any time.
- Being in this project is up to YOU. If you say no, it will not hurt your grades or your chance to be in other school activities.
- You can ask your parents or teachers if you have any questions about this project.
- The person who takes care of you said it is okay for you to do this.
- You will receive a small gift for each survey you take.
- After you finish the questions, your name will be removed from the survey.
- By writing your name below, you agree to be in this project.

Name: \_\_\_\_\_

School: \_\_\_\_\_

Signature \_\_\_\_\_

Grade: \_\_\_\_\_

Teacher: \_\_\_\_\_

Date \_\_\_\_\_

Project Contact Number: 512-482-6185


DATE		
MONTH	DAY	YEAR
Jan		
Feb		
Mar		
Apr		
May		
June		
July		
Aug		
Sept		
Oct		
Nov		
Dec		

Write your LAST NAME (FAMILY NAME)

Write your FIRST NAME

Write your MIDDLE NAME

# STUDENT SURVEY



**MARKING INSTRUCTIONS**

- Use a No. 2 pencil only.
- Do not use ink, ballpoint, or felt tip pens.
- Make solid marks that fill the response completely.
- Erase cleanly any marks you wish to change.
- Do not make any stray marks on this form.

CORRECT: ●
INCORRECT: ☒ ☓ ☐ ☑

DO NOT FILL IN - FOR OFFICIAL USE ONLY

COUNTY	CAMPUS CODE	CLASS	FAMID
	0 0 0 0 0 0 0 0 0 0	0 0	0 0 0 0 0 0 0 0
	1 1 1 1 1 1 1 1 1 1	1 1	1 1 1 1 1 1 1 1
	2 2 2 2 2 2 2 2 2 2	2 2	2 2 2 2 2 2 2 2
	3 3 3 3 3 3 3 3 3 3	3 3	3 3 3 3 3 3 3 3
	4 4 4 4 4 4 4 4 4 4	4 4	4 4 4 4 4 4 4 4
	5 5 5 5 5 5 5 5 5 5	5 5	5 5 5 5 5 5 5 5
	6 6 6 6 6 6 6 6 6 6	6 6	6 6 6 6 6 6 6 6
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	8 8 8 8 8 8 8 8 8 8	8 8	8 8 8 8 8 8 8 8
	9 9 9 9 9 9 9 9 9 9	9 9	9 9 9 9 9 9 9 9

CLASS ROOM NUMBER

TEACHER NAME

Please Do Not Write On This Page

### Questions about what you like to eat

For the questions below, we want to know if you have eaten each vegetable and whether you like it or not. We will show you pictures of each vegetable to help you answer these questions.

	I have never had it	No	Yes
		☐	☑
1. Do you like to eat . . . ?			
a. Corn (maíz o elote)	☐	☐	☑
b. Cauliflower (coliflor)	☐	☐	☑
c. Lettuce (lechuga)	☐	☐	☑
d. Carrots (zanahorias)	☐	☐	☑
e. Celery (apio)	☐	☐	☑
f. Spinach (espinaca)	☐	☐	☑
g. White potatoes (papas blancas)	☐	☐	☑
h. Collard greens (hojas verdes de berza)	☐	☐	☑
i. Sweet potatoes (camotes o batatas)	☐	☐	☑
j. Radishes (rábanos)	☐	☐	☑
k. Cabbage (repollo)	☐	☐	☑
l. Swiss chard (acelga)	☐	☐	☑
m. Tomatoes (tomates)	☐	☐	☑
n. Broccoli (brócoli)	☐	☐	☑
o. Beets (betabeles o remolachas)	☐	☐	☑
p. Bell peppers (pimientos)	☐	☐	☑
q. Squash (calabaza)	☐	☐	☑
r. Green beans (ejotes o habilitales verdes)	☐	☐	☑
s. Sugar snap peas (guisantes chinos)	☐	☐	☑
t. Bok choy	☐	☐	☑

STOP
PLEASE WAIT UNTIL YOU ARE DIRECTED TO CONTINUE
STOP



## PHYSICAL ACTIVITIES

The next questions ask you about how active you are. First, we want to show you some pictures of different activities that you may have done. Any activity that makes your heart beat faster counts as a physical activity. Please look at the pictures and think about which types of activities you normally do.

How physically active are you? Do you agree with following sentences?

2. "Almost every day I do light physical activities." ☐ Yes ☐ No
3. "Almost every day I do moderate physical activities." ☐ Yes ☐ No
4. "Almost every day I do vigorous physical activities." ☐ Yes ☐ No

Now, think about your physical activity yesterday...

5. Yesterday, did you do any moderate or vigorous physical activities for about 30 minutes (about the time it takes to watch a cartoon) DURING THE DAY? (Count in school and out of school activities)  
Examples are: basketball, running or jogging, fast dancing, swimming laps, tennis, fast bicycling, soccer, jumping ropes, trampoline, hockey, fast skating, or rollerblading.  
☐ Yes ☐ No

6. During the past 12 months, on how many sports teams did you play?

Examples are: Soccer, basketball, baseball, softball, swimming, gymnastics, cheerleading, wrestling, track, football, dance, tennis, and volleyball teams. Do not include PE classes.

- ☐ 0 teams ☐ 1 team ☐ 2 teams ☐ 3 or more teams

7. Yesterday, did you play outdoors for about 30 minutes (about the time it takes to watch a cartoon) when AWAY FROM SCHOOL?

- ☐ Yes ☐ No

8. Do you currently take part in any lessons (such as organized physical activities)?

Examples are: martial arts, dance, gymnastics, or tennis?  
☐ Yes ☐ No

9. Yesterday, how many hours did you sit watching TV, DVDs, or movies AWAY FROM SCHOOL?

- ☐ I didn't spend any time watching TV yesterday ☐ 2 - 4 hours  
☐ Less than 1 hour ☐ More than 4 hours  
☐ 1 - 2 hours

Great Work! Don't Stop! Keep Going!

## PHYSICAL ACTIVITIES Continued

10. Yesterday, how many hours did you sit playing on the computer AWAY FROM SCHOOL?

- ☐ I didn't spend any time playing on the computer yesterday ☐ 2 - 4 hours  
☐ Less than 1 hour ☐ More than 4 hours  
☐ 1 - 2 hours

11. Yesterday, how many hours did you sit playing video games AWAY FROM SCHOOL?

- ☐ I didn't spend any time playing video games yesterday ☐ 2 - 4 hours  
☐ Less than 1 hour ☐ More than 4 hours  
☐ 1 - 2 hours

12. On most days, how do you get to school?

- ☐ Walk ☐ Car ☐ Other (write below)  
☐ Bike ☐ Bus

PLEASE WAIT UNTIL YOU ARE DIRECTED TO CONTINUE

13. For each question, pick which you would rather have.

- a. If I could choose, I would rather drink ... ☐ Fruit juice - **QR** ☐ Water
- b. If I could choose, I would rather drink ... ☐ Soda - **QR** ☐ Fruit juice
- c. If I could choose, I would rather drink ... ☐ Water ☐ **QR** ☐ Sport drink

14. For each question, pick which you would rather do.

- a. If I could choose and the weather is nice, I would rather ...  
☐ Play outdoors - **QR** ☐ Play indoors
- b. If I could choose and the weather is nice, I would rather ...  
☐ Play a running game with friends - **QR** ☐ Take a walk with friends
- c. If I could choose and the weather is nice, I would rather ...  
☐ Take a walk with friends - **QR** ☐ Watch TV
- d. If I could choose and the weather is nice, I would rather ...  
☐ Watch TV - **QR** ☐ Play a running game with friends

Great Work! Don't Stop! Keep Going!

## ABOUT YOUR SCHOOL

15. Please tell us how much you agree with the following sentences:

- |  | Not at all<br><input type="radio"/> | Yes, A little<br><input type="radio"/> | Yes, A LOT!<br><input type="radio"/> |
|--|-------------------------------------|--|--------------------------------------|
| a. "I like to go to school."                                 | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| b. "I like what I'm learning in school."                     | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| c. "We do fun activities in my school."                      | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| d. "I am proud of my school."                                | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| e. "My teachers like for me to be healthy."                  | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| f. "Other kids at my school like to be healthy."             | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| g. "My friends at my school like to eat vegetables."         | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |
| h. "My friends at my school like to do physical activities." | <input type="radio"/>               | <input type="radio"/>                  | <input type="radio"/>                |

## YESTERDAY'S FOOD AND DRINKS

This section asks about foods and drinks you had yesterday. Think back to yesterday and answer the best you can.

16. Yesterday, did you eat any orange vegetables like carrots, squash or sweet potatoes?

- ☐ No, I didn't eat any of these vegetables yesterday.  
☐ Yes, I ate these vegetables 1 time yesterday.  
☐ Yes, I ate these vegetables 2 times yesterday.  
☐ Yes, I ate these vegetables 3 or more times yesterday.

17. Yesterday, did you eat a salad made with lettuce, or any green vegetables like spinach, collard greens, Swiss chard, green beans, sugar snap peas, broccoli, or other greens?

- ☐ No, I didn't eat any salad or green vegetables yesterday.  
☐ Yes, I ate salad or green vegetables 1 time yesterday.  
☐ Yes, I ate salad or green vegetables 2 times yesterday.  
☐ Yes, I ate salad or green vegetables 3 or more times yesterday.

18. Yesterday, did you eat any beans like pinto, garbanzo or kidney beans?

- ☐ No, I didn't eat any of these beans yesterday.  
☐ Yes, I ate these beans 1 time yesterday.  
☐ Yes, I ate these beans 2 times yesterday.  
☐ Yes, I ate these beans 3 or more times yesterday.

Great Work! Don't Stop! Keep Going!

## YESTERDAY'S FOOD AND DRINKS Continued

19. Yesterday, did you eat any other vegetables like tomatoes, asparagus, red cabbage, cauliflower, cucumbers, mushrooms, green or red bell peppers, eggplant, or celery?

- ☐ No, I didn't eat any of these vegetables yesterday.  
☐ Yes, I ate these vegetables 1 time yesterday.  
☐ Yes, I ate these vegetables 2 times yesterday.  
☐ Yes, I ate these vegetables 3 or more times yesterday.

20. Yesterday, did you eat fruit? Fruits are all fresh, frozen, canned or dried fruits. DO NOT COUNT fruit juice.

- ☐ No, I didn't eat any fruit yesterday.  
☐ Yes, I ate fruit 1 time yesterday.  
☐ Yes, I ate fruit 2 times yesterday.  
☐ Yes, I ate fruit 3 or more times yesterday.

21. Yesterday, did you drink any punch, Kool-Aid®, sports drinks, or other fruit-flavored drinks? DO NOT COUNT 100% fruit juice.

- ☐ No, I didn't drink any of these drinks yesterday.  
☐ Yes, I drank one of these drinks 1 time yesterday.  
☐ Yes, I drank one of these drinks 2 times yesterday.  
☐ Yes, I drank one of these drinks 3 or more times yesterday.

22. Yesterday, did you drink any 100% fruit juice?

- Fruit juice is a drink that is 100% juice, like orange juice, apple juice or grape juice. DO NOT COUNT punch, Kool-Aid®, sport drinks, or other fruit-flavored drinks.  
☐ No, I didn't drink any of these drinks yesterday.  
☐ Yes, I drank one of these drinks 1 time yesterday.  
☐ Yes, I drank one of these drinks 2 times yesterday.  
☐ Yes, I drank one of these drinks 3 or more times yesterday.

23. Yesterday, did you drink any regular sodas or soft drinks?

- ☐ No, I didn't drink any regular (not diet) sodas or soft drinks yesterday.  
☐ Yes, I drank regular (not diet) sodas or soft drinks 1 time yesterday.  
☐ Yes, I drank regular (not diet) sodas or soft drinks 2 times yesterday.  
☐ Yes, I drank regular (not diet) sodas or soft drinks 3 or more times yesterday.

Great Work! Don't Stop! Keep Going!

### YESTERDAY'S FOOD AND DRINKS Continued

24. Yesterday, how many times did you drink a cup or bottle of water?
- ☐ No, I didn't drink any water yesterday.
- ☐ Yes, I drank a cup or bottle of water 1 time yesterday.
- ☐ Yes, I drank a cup or bottle of water 2 times yesterday.
- ☐ Yes, I drank a cup or bottle of water 3 or more times yesterday.

### FAMILY ACTIVITIES





25. Please tell us how often adults in your family . . .
- |  | Never                 | Once in a while       | Sometimes             | A lot of times        | All of the time       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. Spend time teaching you how to play sports and be active. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. Play sports and are active with you.                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
26. Tell us which of the following activities you have done in the last year with your family.
- | In the past year, have you . . .  | Yes                   | No                    |
|---|-----------------------|-----------------------|
| a. planned a vegetable garden with members of your family?                          | <input type="radio"/> | <input type="radio"/> |
| b. planted seeds or plants in a vegetable garden with members of your family?       | <input type="radio"/> | <input type="radio"/> |
| c. picked vegetables from a garden with members of your family?                     | <input type="radio"/> | <input type="radio"/> |
| d. tasted vegetables from a garden with members of your family?                     | <input type="radio"/> | <input type="radio"/> |
| e. pulled weeds or watered plans in a vegetable garden with members of your family? | <input type="radio"/> | <input type="radio"/> |
27. If you have gardened in a vegetable garden with members of your family, did you enjoy it?
- |  | I have never gardened | Yes                   | No                    |
|--|-----------------------|-----------------------|-----------------------|
|  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
28. Tell us how often you usually eat meals with your family.
- | How often do you . . .                            | Never or Almost Never | Sometimes             | Almost Always or Always |
|---|-----------------------|-----------------------|-------------------------|
| a. eat breakfast with members of your family?     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| b. eat evening meals with members of your family? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| c. go out to eat with members of your family?     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| d. help make food with members of your family?    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |

Great Work! Don't Stop! Keep Going!

### Tell Us About You!

29. Are you a boy or a girl? ☐ Boy ☐ Girl
30. How old are you? ☐ 7 years old ☐ 8 years old ☐ 9 years old ☐ 10 years old ☐ 11 years old
31. What grade are you in? ☐ 2nd ☐ 3rd ☐ 4th ☐ Other grade
32. Have you been at this school since the beginning of the school year? ☐ Yes ☐ No
33. How do you describe yourself? (Fill in all that apply)
- ☐ American Indian or Alaskan Native ☐ Hispanic or Latino ☐ White
- ☐ Black or African American ☐ Native Hawaiian or Pacific Islander ☐ Other (please write below)

### All About Healthy Living

34. How much of your lunch or dinner plate should be vegetables?
- |   | Quarter (1/4)         | Half (1/2)            | Three-Fourths (3/4)   | Whole (all)           |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
|    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
35. Which of the following are examples of nutrients found in foods?
- a. Protein ☐ Yes ☐ No ☐ I don't know
- b. Carbohydrates ☐ Yes ☐ No ☐ I don't know
- c. Fat ☐ Yes ☐ No ☐ I don't know
- d. Vitamins and Minerals ☐ Yes ☐ No ☐ I don't know
- e. Water ☐ Yes ☐ No ☐ I don't know
36. Which of the following is the healthiest choice?
- ☐ Soda ☐ Sports drink ☐ Water ☐ Iced tea ☐ I don't know
37. A physical activity is any activity that makes you breathe harder.
- How many minutes of physical activity should you do on all or most days of the week?
- ☐ Less than 20 minutes ☐ 30 minutes ☐ 60 minutes
- ☐ 20 minutes ☐ 45 minutes ☐ I don't know

Great Work! Don't Stop! Keep Going!

### All About Healthy Living Continued

38. What gas do plants give off during photosynthesis?
- ☐ Oxygen ☐ Sunlight ☐ I don't know
- ☐ Water ☐ Carbon dioxide
39. Which item below is the beginning of all food chains?
- ☐ People ☐ Insects ☐ I don't know
- ☐ Animals ☐ Plants
40. A fruit starts out as a:
- ☐ Twig ☐ Stem ☐ I don't know
- ☐ Leaf ☐ Flower
41. Plants turn sunlight into energy. This is called:
- ☐ Evaporation ☐ Osmosis ☐ I don't know
- ☐ Photosynthesis ☐ Decomposition

YOU DID IT! YOU ARE FINISHED!  
Thank you for all the hard work!

## APPENDIX C

Children Body Image Scale (Truby & Paxton, 2002)

